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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,559	02/09/2004	Clifford F. Biddulph	PVOZ 2 00015	8972
27885 7590 06/25/2009				
Fay Sharpe LLP 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115				
EXAMINER				
ZHENG, LOIS L				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
06/25/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/774,559

Applicant(s)

BIDDULPH ET AL.

Examiner

LOIS ZHENG

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8, 9 and 19-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 9 and 19-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 June 2009 has been entered.

Status of Claims

2. Claims 1 and 19-20 are amended in view of applicant's amendment filed 8 June 2009. Claims 7 and 10-18 are canceled. Therefore, claims 1-6, 8-9 and 19-23 are currently under examination.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6, 8-9 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/07902(WO'902).

WO'902 teaches a two stage anticorrosive black coating forming process wherein the first stage comprises the application of an anticorrosive aqueous acidic coating solution free of hexavalent chromium, wherein the coating solution comprises

0.02mol/l – 0.58mol/l of Cr(III), 0.1mol/l – 0.42mol/l of phosphate ions incorporated from phosphoric acid or sodium phosphate, 0.001mol/l – 0.1mol/l of iron, cobalt and/or nickel ions. WO'902 also teaches that the coating solution comprises one or more citric acid, tartaric acid, malonic acid as complexing agents to complex the Cr(III) ions and to regulate the chrome(III) hydroxide precipitate on the metal surface. The pH of the coating solution is maintained between 1 and 4 by using nitric or sulfuric acids. WO'902 further teaches that the phosphate is favorably added for the formation of a dark conversion coating and iron, cobalt and/or nickel are added for the formation of a black color coating. See last paragraph on page 1 – bottom of page 2 of the translation.

Regarding claims 1-6, 8-9, 19-20 and 22-23, the one or more citric acid, tartaric acid and malonic acid as taught by WO'902 read on the claimed chelate. The nitrate and sulfate ions from the nitric or sulfuric acid used for pH control as taught by WO'902 read on the claimed sulfate and/or nitrate ions. The iron, cobalt and nickel ions as taught by WO'902 read on the claimed transition metal or metalloid.

In addition, the component concentrations of Cr(III) ions, phosphorous anions, Fe/Co/Ni ions, the pH value ranges and the Cr(III) to Fe/Co/Ni ratio range(i.e. as calculated from the concentrations of Cr(III) ions and Fe/Co/Ni ions) in the first coating solution of WO'902 overlap the claimed component concentration ranges, the claimed pH value range and the claimed Cr(III) to transitional metal or metalloid range. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed component concentrations and pH range from the disclosed ranges of WO'902 would have been obvious to one skilled in the art since WO'902 teaches the

same utilities in its disclosed component concentration ranges, pH value range, and Cr(III) to Fe/Co/Ni ratio range.

With respect to the claimed amounts of organic chelate, the carboxylic acids as taught by WP'902 such as citric acid, tartaric acid, malonic acid are used to complex the Cr(III) ions and to regulate the chrome(III) hydroxide precipitate on the metal surface(page 2 lines 20-24). Therefore, WO'902 teaches that the carboxylic acids such as citric, tartaric and malonic acids are result effective variables. One of ordinary skill in the art would have found it obvious to have varied the concentration of the carboxylic acids in the coating solution of WO'902 via routine optimization in order to perform the desired complexing of Cr(III) and to achieve desired amount Cr(III) hydroxide precipitation.

With respect to the claimed amount of sulfate and nitrate ions, WP'902 teaches that sulfuric and nitric acids are used to control pH of the coating solution. Therefore, the concentrations of sulfate and nitrate ions are result effective variables. One of ordinary skill in the art would have find it obvious to have varied the amount of sulfate and nitrate ions in the coating solution of WO'902 via routine optimization in order to achieve desired pH.

Furthermore, since the trivalent chromium containing anticorrosive coating solution used in the first stage of the process of WO'902 is significantly similar the claimed aqueous acidic solution and the presence of phosphate, iron, cobalt and/or nickel are recommended for forming a black coating as taught by WO'902(page 2 lines 25-26 and 41-43), one of ordinary skill in the art would have expected that the

hexavalent chromium free trivalent chromium containing anticorrosive coating solution used in the first stage of the process of WO'902 is capable of providing a black chromate conversion coating layer in a single layer as claimed.

Regarding claim 21, WO'902 teaches that phosphate ions can be used to form a dark conversion coating (page 2, lines 25-26). Although WO'902 does teach several phosphate anion containing compounds suitable for such a purpose, the scope of WO'902's teaching includes just one of such phosphate anion containing compounds. Therefore, the examiner concludes that teachings of WO'902 meet the claimed limitation of "wherein the phosphorous anions consisting of phosphate anions".

5. Claims 1-6, 8-9 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima et al. US 6,719,852 B2 (Oshima) in view of WO 02/07902 (WO'902).

Oshima teaches an aqueous acidic coating solution that is free of hexavalent chromium (abstract), wherein the coating solution comprises 0.2-5g/l of trivalent chromium ions (col. 4 lines 14-21), 0.2-10g/l of cobalt ions (col. 4 lines 33-45), 1-50g/l of inorganic salts of nitric or sulfuric acid (col. 4 lines 54-60), 0.1-50g/l of phosphoric acid (col. 4 lines 61-67) and 1-30g/l of carboxylic acids, such as citric acid, tartaric acid, malonic acid and succinic acid (col. 5 lines 1-7) and 0.2-13g/l of oxalic acid (col. 4 lines 27-32). The coating solution of Oshima has a pH of 0.5-4 (col. 5 lines 8-10).

Regarding claims 1-6, 8-9, 19-20 and 22-23, the oxalic acid or any of the carboxylic acids listed above as taught by Oshima read on the claimed chelate. The nitrate and sulfate ions from the inorganic salts of nitric or sulfuric acid as taught by

Oshima read on the claimed sulfate and/or nitrate ions. The cobalt ions as taught by Oshima read on the claimed transition metal or metalloid.

However, even though Oshima teaches various color finishes in its examples (Table 4). Oshima does not explicitly teach that the coating solution can produce a black chromate coating as claimed.

The teachings of WO'902 are discussed in paragraph 4 above. WO'902 further teaches that cobalt, iron and/or nickel in the amounts of 0.001 mol/l and 0.1 mol/l each can be added to promote a black color film(translation, page 2 lines 4-6 from the bottom). Presence of phosphate also helps formation of a dark conversion coating(page 2 lines 25-32). Black pigments such as carbon black in an amount of 5-20g/l can also be added according to WO'902(translation, page 3 two lines after "Day 2").

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated cobalt, nickel and/iron in a concentration of 0.001-0.1mol/l each and back pigments such as carbon black in an amount of 5-20g/l as taught by WO'902 into the coating solution of Oshima in order to produce a black chromate coating. In addition, WO'902 teaches a coating solution that has significantly the same coating components as the coating solution of Oshima. The teachings of Oshima and WO'902 further show that different coating component concentrations result in different coating colors. Therefore, one of ordinary skill in the art would have found it obvious to have varied the concentrations of the coating components in the coating solution of Oshima in order to achieve a desired coating color such as the black color coating as claimed.

In addition, the component concentrations of Cr(III) ions, phosphorous anions, Co ions, oxalic acid and/or carboxylic acids, Cr(III) ion/Co ion ratio and the pH value in the coating solution of Oshima in view of WO'902 overlap the claimed component concentration ranges and the claimed pH value range. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed component concentrations, Cr(III)/transitional metal or metalloid ion ratio and pH ranges from the disclosed ranges of Oshima in view of WO'902 would have been obvious to one skilled in the art since Oshima in view of WO'902 teach the same utilities in their disclosed component concentration, Cr(III)/Co ion ratio and pH value ranges.

Furthermore, since the acidic coating solution of Oshima in view of WO'902 is significantly similar the claimed aqueous acidic solution and comprises phosphate, iron, cobalt and/or nickel ions that are recommended for forming a black coating as taught by WO'902(page 2 lines 25-26 and 41-43), one of ordinary skill in the art would have expected that the acidic trivalent chromium containing solution of Oshima in view of WO'902 is capable of providing a black chromate conversion coating layer in a single layer as claimed.

Regarding claim 21, although Oshima teaches at least one phosphate anion containing compounds(col. 4 lines 61-67), the scope of Oshima's teaching includes just one of such phosphate anion containing compounds. Therefore, the examiner concludes that teachings of Oshima meet the claimed limitation of "wherein the phosphorous anions consisting of phosphate anions".

Response to Arguments

6. Applicant's arguments filed 8 June 2009 have been fully considered but they are not persuasive.

In the remarks, applicant argues that WO'902 teaches a two stage process that produces a black anticorrosive coating formed of two layers not the singular layer produce by the black chromium conversion coating as claimed.

The examiner does not find applicant's argument persuasive because what is claimed is an aqueous acidic solution, not a final coating layer. As set forth above, the anticorrosive trivalent chromium contain solution used in the first stage of WO'902's process is significantly similar to the claimed aqueous acidic solution and comprises components that contributions to the formation of a black coating such as phosphate, Fe, Co and Ni. Therefore, one of ordinary skill in the art would have expected that the trivalent chromium coating solution used in the first stage of WO'902's process is capable of producing a black chromate coating layer as claimed.

Applicant further argues that claimed amounts of sulfuric and/or nitric acid are not for pH control, therefore, varying the amount of sulfuric and/or nitric acid as set forth in the rejection ground is not supported.

The examiner does not find applicant's argument persuasive because pH of the coating bath affects coating process and the coating quality. Therefore, controlling the pH of the coating solution by adding sulfuric and/or nitric acids as taught by WO'902 is mechanism used to control coating quality and coating properties. One of ordinary skill in the art would have find it obvious to have varied the amount of sulfate and nitrate ions

in the coating solution of WO'902 via routine optimization in order to achieve and maintain desired pH in the coating solution. In addition, it is well settled that the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972). See MPEP 2144.

Applicant further argues that one would not incorporate carbon black of WO'902 into the solution of Oshima because carbon black is used in a non-chromium solution in the second stage of WO'902's process. Applicant further argues that the combination of Oshima in view of WO'902 is based on improper use of hindsight.

The examiner does not find applicant's argument persuasive. There are various things that can be added to a trivalent chromium solution in order to make the resulting coating black. WO'902 teaches phosphate, Fe, Co and Ni ions are all contributors. Of course, color pigments have been widely used in the coating industry to impart color to the coating formed as evidenced by WO'902. Therefore, it would have been within one of ordinary skill in the art to have incorporated some or all of phosphate, Fe, Co, Ni ions or carbon black(i.e. color pigment) as taught by WO'902 into the coating solution of Oshima in order to achieve a black coating.

Applicant further argues that the first solution as taught by WO'902 together with the second solution of WO'902 produces an overall black coating and there is no motivation to vary the concentration of the coating components in WO'902 to achieve desired black coating.

Although WO'902's overall black coating solution is produced by applying both the first and the second coating solutions, WO'902 does not teach that its first solution (i.e. trivalent chromium solution) produces a coating layer that is not black. In fact, WO'902's first trivalent chromium solution comprises components that contribute to a black coating layer such as phosphate, Fe, Co and Ni ions. Therefore, the examiner maintains that the trivalent chromium coating solution of WO'902 is capable of producing black chromate conversion coating layer as claimed absent persuasive evidence to the contrary.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Preikschat et al. US 6,287,704 B1 teaches that black chromate layer can be formed with addition of colloidal silver ions, iron, nickel or cobalt oxide(col. 2 lines 34-55).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
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LLZ